California Regional Water Quality Control Board
Santa Ana Region

July 19, 2013

ITEM: **12**

SUBJECT: Resolution No. R8-2013-0044: Consideration of Approval of the Comprehensive Nutrient Reduction Plan (CNRP) Submitted in Compliance with the Lake Elsinore and Canyon Lake Nutrient TMDLs and in Compliance with the Riverside County Municipal Separate Storm Sewer System (MS4) Permit (Order No. R8-2010-0033)

Background

On December 20, 2004, the California Regional Water Quality Control Board, Santa Ana Region (Regional Board), adopted Resolution No. R8-2004-0037, amending the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The amendment incorporated nutrient Total Maximum Daily Loads (TMDLs) for Lake Elsinore and Canyon Lake in Chapter 5, "Implementation" of the Basin Plan. The TMDLs were approved by the State Water Resources Control Board (State Water Board) on May 19, 2005 (Resolution No. 2005-0038) and the California Office of Administrative Law (OAL) on July 26, 2005. On September 30, 2005, the US Environmental Protection Agency, Region IX approved the Lake Elsinore and Canyon Lake Nutrient TMDLs. The purpose of the TMDLs is to ensure attainment of water quality standards (beneficial uses, water quality objectives and antidegradation policy) in Lake Elsinore and Canyon Lake. The beneficial uses of both lakes are impaired due to nutrients (nitrogen and phosphorus).

In summary, the Lake Elsinore/Canyon Lake Nutrient TMDLs include the following components: interim numeric targets for chlorophyll and dissolved oxygen to be achieved no later than 2015; final numeric targets for nitrogen, phosphorus, chlorophyll and dissolved oxygen to be achieved no later than 2020; nitrogen and phosphorus TMDLs, wasteload allocations (WLAs) for point source discharges and load allocations (LAs) for nonpoint source discharges, all expressed as 10-year running averages; and, an implementation plan and schedule to achieve reductions in nutrient loads. In order to implement the TMDL requirements and to develop effective solutions for improving water quality in Lake Elsinore and Canyon Lake, responsible co-permittees and stakeholders formed the Lake Elsinore and Canyon Lake TMDL Task Force (TMDL Task Force)[1]. The Lake Elsinore and San Jacinto Watershed Authority (LESJWA) serves as the TMDL Task Force administrator.

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[1] US Air Force (March Air Reserve Base), March Joint Powers Authority, California Dept. of Transportation (Caltrans), California Dept. of Fish and Wildlife (formerly California Department of Fish and Game), County of Riverside, Riverside County Flood Control and Water Conservation District, the cities of Lake Elsinore, Canyon Lake, Hemet, San Jacinto, Perris Moreno Valley, Murrieta, Riverside, Menifee, Wildomar, Beaumont, Eastern Municipal Water District, Elsinore Valley Municipal Water District, and Western Riverside County Agricultural Coalition (on behalf of concentrated animal feeding operators and agricultural operators within the San Jacinto watershed).

The US Forest Service, a named responsible agency in the TMDL, has recently opted to not be part of the TMDL Task Force.

In order to achieve compliance with the numeric targets, TMDLs, WLAs and LAs, the TMDLs require all point source dischargers and nonpoint source discharges to develop and implement a nutrient monitoring program and to develop their respective nutrient reduction plans. Table 1 shows all the TMDL required tasks, due dates and the status of each task as of April 2013.

Specific nutrient sources identified in the TMDLs and given either WLAs or LAs with specific nutrient reduction requirements are as follows:

Point Sources (WLAs)
- Urban sources (the county, cities, Caltrans and Department of Defense (DOD) facilities)
- Recycled Water addition to Lake Elsinore (Elsinore Valley Municipal Water District)
- Confined Animal Feeding Operators (dairies)

Non-point Sources (LAs)
- Agriculture
- Septic Systems
- Internal In-lake sediment
- Open Space Lands (forest lands and other open space)

As can be seen in Table 1, the Regional Water Board as well as the stakeholders have been actively undertaking actions since the TMDL was adopted to implement the TMDL. These activities include the following:

- Regional Water Board incorporated WLAs into relevant permits
  - ✓ Stormwater: MS4, DOD facilities, Caltrans
  - ✓ Publicly Owned Treatment Works – Elsinore Valley MWD
  - ✓ Confined Animal Feeding Operations (CAFO)
- Regional Board issued 13267 Investigative Orders to approximately 400 agricultural operators
- Regional Board adopted Septic System Prohibition in Quail Valley
- Stakeholder in-lake and watershed monitoring programs implemented
- Stakeholder management projects implemented in <u>Lake Elsinore</u>
  - ✓ Aeration system
  - ✓ Fishery management
  - ✓ Lake stabilization with recycled water
- Stakeholder management projects implemented in <u>Canyon Lake</u>
  - ✓ In-lake sediment nutrient reduction studies

Table 1 – Lake Elsinore/Canyon Lake Nutrient TMDLs Implementation Plan/Schedule Report Due Dates – Status as of June 2013

Task	Description	Compliance Date-As soon As Possible but No Later Than	Status
Task 1	Establish New Waste Discharge Requirements	**March 31, 2006**	*On-going as needed*
Task 2	Revise Existing Waste Discharge Permits	**March 31, 2006**	*Complete/Ongoing as needed*
Task 3	Identify Agricultural Operators	**October 31, 2005**	*Complete/ongoing*
Task 4	Nutrient Water Quality Monitoring Program 4.1 Watershed-wide Nutrient Monitoring Plan(s) 4.2 Lake Elsinore Nutrient Monitoring Plan(s) 4.3 Canyon Lake Nutrient Monitoring Plan(s)	• Initial plan/schedule due **December 31, 2005** • Annual reports due August 15 • Revised plan/schedule due **December 31, 2006**	*Complete and approved by Water Board March 2006* *Revision approved March 2011* *Revision approved October 2012Annual reports submitted*
Task 5	Agricultural Discharges – Nutrient Management Plan	Plan/schedule due **September 30, 2007**	*Initial plan/schedule complete and approved by Water Board Nov. 2007.* *AgNMP "final" draft submitted April 2013; anticipated Water Board approval – October 2013.*
Task 6	On-site Disposal Systems (Septic Systems) Management Plan	Dependent on State Board approval of relevant regulations	*On-going*
Task 7	Urban Discharges 7.1 Revision of Drainage Area Management Plan (DAMP) 7.2 Revision of the Water Quality Management Plan (WQMP) 7.3 Update of the Caltrans Stormwater Management Plan and Regional Plan 7.4 Update of US Air Force, March Air Reserve Base SWPPP	Plan/schedule due: 7.1 **August 1, 2006** 7.2 **August 1, 2006** 7.3 **April 1, 2006** 7.4 Dependent on Task 4 results.	*MS4 Requirements incorporated into 2010 MS4 permit. MS4 final CNRP submitted January 2013. Revision/update of DAMP/WQMP to incorporate CNRP. Water Board approval – July 2013.* *Caltrans: requirements to be incorporated into statewide permit.* *March ARB: requirements incorporated into permit.*
Task 8	Forest Area – Review/Revision of Forest Service Management Plans	Plan/schedule due **September 30, 2007**	*USFS plan/schedule approved by Water Board Nov. 2007*
Task 9	Lake Elsinore In-Lake Sediment Nutrient Reduction Plan	Plan/schedule due **March 31, 2007**	*Plan/schedule approved by Water Board Nov. 2007. Actions incorporated into Jan. 28, 2013 final CNRP and Apr. 30, 2013 final AgNMP.*
Task 10	Canyon Lake In-Lake Sediment Treatment Evaluation	Plan/schedule due **March 31, 2007**	*Plan/schedule approved by Water Board Nov. 2007. Actions incorporated into Jan. 28, 2013 final CNRP and Apr. 30, 2013 final AgNMP.*
Task 11	Watershed and Canyon Lake and Lake Elsinore In-Lake Model Updates	Plan/schedule due **March 31, 2007**	*Model plan/schedule approved by Water Board Nov. 2007. Additional modeling completed 2010.*
Task 12	Pollutant Trading Plan	*Plan/schedule due September 30, 2007*	*Plan/schedule approved by Water Board Nov. 2007.*
Task 13	Review and Revise Nutrient Water Quality Objectives	*December 31, 2009*	*to be accomplished in the future if appropriate*
Task 14	Review of TMDL/WLA/LA	Once every 3 years to coincide with the Water Board's triennial review	*The next triennial review is scheduled for 2015*

Incorporation of the Lake Elsinore/Canyon Lake Nutrient TMDLs into the Riverside County MS4 Permit

As indicated above and in Table 1, requirements necessary to implement the Lake Elsinore/Canyon Lake Nutrient TMDLs have been incorporated into the Riverside County MS4 permit (Order No. R8-2010-0033, NPDES No. CAS618033). Recognizing the difficulty in achieving nutrient reduction from such a large watershed and the need for adaptive implementation of BMPs sufficient to meet the WLAs specified in the TMDLs, the MS4 permit includes requirements for the co-permittees to develop a Comprehensive Nutrient Reduction Plan (CNRP) designed to achieve the MS4 WLA by the 2020 TMDL compliance date. Upon approval by the Regional Board, the CNRP serves as the final Water Quality-Based Effluent Limitations (WQBELs) for nutrients in the Lake Elsinore/Canyon Lake watershed. The MS4 permit requires the final WQBELs to be achieved by December 31, 2020, consistent with the schedule identified in the TMDLs. The permit also specifies numeric WQBELS based on the nitrogen and phosphorus WLAs and that these numeric WLAs apply should the Regional Board-approved CNRP not be completed by January 1, 2021.

Proposed Comprehensive Nutrient Reduction Plan (CNRP)

In accordance with Section VI.D.2.d. of the Riverside County MS4 permit, Riverside County MS4 co-permittees submitted a draft CNRP by December 31, 2011. The draft CNRP addressed both the urban MS4 WLA and the on-site wastewater treatment system load (septic systems) since these systems are part of the urban load. The December 2011 CNRP proposed the implementation of watershed-wide BMPs to target nutrients at the source, including street sweeping, adoption of new and/or enhancement of existing pet waste ordinances, adoption of fertilizer ordinances and implementation of Low Impact Development (LID) and Water Quality Management Plan elements (WQMP) in development activities. The December 2011 proposal also relied upon the construction of a Hypolimnetic Oxygenation System (HOS) in Canyon Lake. This proposed project would provide oxygen directly to the deepest parts of Canyon Lake where the oxygen levels are suppressed. As a result, oxygen on the bottom of the lake would increase and phosphorus release from the bottom lake sediments would be reduced, resulting in decreased algae levels (as measured by chlorophyll) and thereby improving water quality in Canyon Lake.

Regional Board staff reviewed the 2011 CNRP and provided comments to the co-permittees in March 2012. Our comments highlighted inadequacies and clarification issues in the draft CNRP and indicated that these inadequacies must be addressed. Overall, however, Board staff found that the draft CNRP identified appropriate watershed based BMPs for addressing MS4 nutrient sources and that the proposed plan to address the nutrient build-up in Canyon Lake sediments was appropriate.

To address Regional Water Board staff comments, the County submitted two interim revised CNRPs. Pursuant to permit requirements a revised CNRP was due 90 days after receipt of comments from the Regional Water Board. The revised CNRP was submitted June 2012; however, based upon further evaluation and studies conducted by consultants to the TMDL Task Force, the TMDL Task Force and MS4 co-permittees determined that the HOS system, while improving dissolved oxygen levels in Canyon Lake, would not result in achievement of the chlorophyll TMDL numeric target (*e.g.*, there would be little reduction in algae levels). As a result, the MS4 co-permittees revised the CNRP to identify a more viable project that would

ensure that the TMDL numeric targets would be met. This second proposed Final CNRP, dated January 28, 2013, contained the same watershed based BMPs as the original December 2011 CNRP; the major difference was the in-lake project selected for Canyon Lake. The MS4 co-permittees identified the application of alum (aluminum sulfate) as the most viable option for addressing the in-lake sediment nutrient load in Canyon Lake.

Regional Water Board staff also solicited comments from the public on the Draft and the proposed Final CNRP. Comments on the December 2011 draft CNRP were received from Inland Empire Water Keeper. Comments on the January 2013 Final CNRP were received from the City of Lake Elsinore, City of San Jacinto, County of Riverside, and the Riverside County Flood Control and Water Conservation District. Board staff evaluated the comments received in developing the staff recommendation and have determined that no revisions to the proposed Final CNRP are needed. Responses to the comments received are included in Attachment 2.

The proposed Riverside County Lake Elsinore/Canyon Lake CNRP, Regional Water Board staff comments on the draft CNRP and comment letters received can be found on the Regional Water Board's website at the following link:

http://www.waterboards.ca.gov/santaana/water_issues/programs/stormwater/riverside_permit_cnrp.shtml

The following provides a summary of the proposed MS4 co-permittee's CNRP. The basic strategy of the CNRP is to implement BMPs in the watershed to control nutrient sources to the extent practicable and to implement in-lake remediation activities to address nutrients once they are delivered to the Lakes. Monitoring and adaptive implementation of additional/revised control measures if and as necessary are also key parts of the CNRP.

Many of the proposed BMPs are a continuation or extension of BMPs already being implemented by the co-permittees. The CNRP recognizes that most nutrients are discharged to the Lakes during periods of heavy rainfall, and that reducing loads to meet the WLAs using watershed-based BMPs alone would thus be nearly impossible and extremely costly. The watershed BMPs would need to be designed to treat extreme storm events, while they are typically designed to treat smaller storm events. Consequently, control/remediation actions are necessary once the nutrients have entered the Lakes. Reduction of internal nutrient loads can offset reductions required from urban and septic sources that cannot be achieved with existing and planned watershed BMPs. In-lake BMPs can be designed specifically to achieve the numeric response targets in the TMDLs.

The CNRP identifies a two phased implementation Plan. During Phase 1 (2013-2015), the 2015 interim and 2020 final chlorophyll response targets and the 2015 interim dissolved oxygen targets are expected to be met through implementation of the following actions[2]:

a. Lake Elsinore and Canyon Lake - implementation of watershed BMPs

[2] The expected benefits of implementing the Phase 1 actions on Lake Elsinore and Canyon Lake water quality were determined through modeling and through an evaluation of the literature to determine expected nutrient reduction from the various BMPs.

i. Ordinance development by co-permittees (pet waste, fertilizer application, yard waste);
ii. Continue and/or enhance existing street sweeping programs;
iii. Address septic systems within co-permittees jurisdiction;
iv. Low Impact Development (LID) and Land Use Conversion BMPs;
v. Continue and/or enhance public education programs
vi. Continue and/or enhance inspection and enforcement programs;

b. Canyon Lake - aluminum sulfate (alum) addition in February and September of each year beginning September 2013;

c. Lake Elsinore - continued operation of the Lake Elsinore aeration/mixing system

At the conclusion of Phase 1, the stakeholders will initiate an evaluation of the water quality in both Lake Elsinore and Canyon Lake to determine TMDL compliance status and if the projects and BMPs implemented will ensure that the dissolved oxygen and chlorophyll interim targets are being met. At this time, the stakeholders and/or Regional Water Board will determine whether modifications to the TMDLs or CNRP are warranted.

Phase 2 (2016-2020) actions are focused on ensuring that by the final TMDL compliance date of December 31, 2020, the final TMDL dissolved oxygen targets are met and the final chlorophyll targets are met (if not achieved in Phase 1). Based on the evaluation results completed at the conclusion of Phase 1, Phase 2 may include the following actions necessary to meet the final dissolved oxygen targets and address any remaining impairments (*e.g.* chlorophyll or possible ammonia toxicity);

a. Lake Elsinore and Canyon Lake - continued Phase 1 watershed BMP implementation. If needed, implementation of additional BMPs;
b. Canyon Lake – continued aluminum sulfate (alum) addition twice a year. If needed, implementation of additional in-lake sediment nutrient treatment program (*e.g.* zeolite addition, HOS);
c. Lake Elsinore - continued operation of the Lake Elsinore aeration/mixing system.

During Phase 2, the stakeholders will continue to complete analyses to support any proposed TMDL revisions and work with Regional Water Board staff to initiate those revisions.

The MS4 co-permittees intend to demonstrate compliance with the TMDLs and urban/septic system WLAs in the following manner:

1. Directly, using relevant monitoring data and/or approved modeling procedures to estimate actual nitrogen and phosphorus loads being discharged to the lakes, or,

2. Indirectly, using water quality monitoring data and other biological metrics approved by the Regional Board, to show water quality standards are being consistently attained (as measured by the response targets (dissolved oxygen and chlorophyll) identified in the

Nutrient TMDLs. If water quality standards are being attained, the co-permittees' obligation to meet the WLAs is satisfied, or,

3. Compliance with the urban WLAs may also be accomplished through the trading of pollutant allocations among sources. Such allocation tradeoffs can be used to optimize control of both point and non-point sources.

CNRP Implementation Plan and Schedule

Key implementation activities in the proposed Final CNRP and the steps/schedule are shown in Table E-1: "CNRP Implementation Plan" (excerpted from the January 28, 2013 CNRP report prepared by CDM Smith for the County).

Compliance Analysis

For both Lake Elsinore and Canyon Lake, the proposed CNRP provides an analysis of the expected nitrogen and phosphorus load reductions resulting from the implementation of watershed BMPs and from implementation of the in-lake sediment remediation projects. The CNRP describes the existing and planned in-lake remediation projects for the two Lakes.

As noted above, in Lake Elsinore, three projects are currently being implemented, through the TMDL Task Force, by the responsible parties identified in the TMDL: operation of the aeration/mixing system, fishery management and lake stabilization through the addition of recycled water.

For Lake Elsinore, nitrogen and phosphorus reductions will be achieved to a large extent by the implementation of watershed BMPs. However, as discussed above, implementation of watershed BMPs alone will not ensure that the urban/septic allocations are met. Therefore, the additional nitrogen and phosphorus reductions needed will be provided by credits available through the co-permittees support of the implementation of the aeration/mixing system. The CNRP documents that the co-permittees support of this system alone will be sufficient to achieve the in-lake nutrient load reduction necessary to offset the remainder of urban and septic system nutrient loads in excess of WLAs.

This dual approach is expected to achieve compliance with the WLAs, but, depending in part on strategies implemented by the other stakeholders, it may not ensure that the TMDL response targets, dissolved oxygen and chlorophyll, are met by the 2020 TMDL compliance date. Therefore, it will be extremely important to continue the in-lake monitoring program to assess Lake Elsinore water quality. If the data show that the TMDLs targets may not be met despite these actions, Regional Water Board staff may recommend revision to the TMDLs to further reduce all, or specific stakeholder allocations or to propose an alternative compliance strategy.

For Canyon Lake, the MS4 co-permittees' implementation of watershed BMPs will again not be sufficient to meet the urban/septic wasteload allocations. However, in contrast to the approach proposed for Lake Elsinore, the CNRP does not propose that the MS4 co-permittees support projects that would provide nutrient load reductions to Canyon Lake sufficient to offset the nutrient load in excess of the WLAs. Rather, the CNRP proposes that the co-permittees support

alum additions that are expected to result in compliance with the chlorophyll and dissolved oxygen numeric targets. Based on extensive water quality modeling conducted by Dr. Michael Anderson of UC Riverside, the use of alum application in Canyon Lake in the fall and in the winter when stormwater is discharged to Canyon Lake will bind and render the phosphorus in both the water column and in the bottom sediments unavailable for fueling algae growth. As a result, chlorophyll levels will decrease and the final 2020 chlorophyll numeric target specified in the TMDL is projected to be met by 2015. The CNRP contains detailed studies and evaluation of the expected benefits from alum addition in Canyon Lake. The focus of this approach is to ensure that the TMDL "response" targets, dissolved oxygen and chlorophyll, are met in Canyon Lake. These targets are directly related to the overall health of the Lakes. Even if the "causal targets", nitrogen and phosphorus, are not met in Canyon Lake, Board staff believe that as long as there is sufficient dissolved oxygen in the lakes and the chlorophyll levels meet the TMDL targets, the beneficial uses of Canyon Lake would be restored. If the numeric targets and TMDLs are achieved, then the obligations of the MS4 co-permittees to achieve the WLAs is satisfied.

Monitoring and Reporting

The CNRP outlines the proposed monitoring and reporting program. The program includes the following:

1. Annual Monitoring Report - the TMDL requires the submittal of an annual monitoring report in August of each year. This annual report, prepared by LESJWA on behalf of the TMDL Task Force, provides a summary of the annual Lake Elsinore and Canyon Lake in-lake monitoring and watershed monitoring results. The MS4 co-permittees will continue to contribute to the both the monitoring program and report preparation.

2. Revised Monitoring Program – By December 2014, the MS4 co-permittees, in coordination with the TMDL Task Force, will submit a proposed revised comprehensive monitoring program that will include both watershed wide and in-lake monitoring activities. The proposed monitoring program will address assessment of implementation of in-lake projects and watershed BMPs.

3. MS4 Permit Annual Report (Section VI.D.2.f) – the permit requirement to submit an annual MS4 summary report by November 30th of each year, will include an evaluation of BMPs implemented pursuant to the approved CNRP and the effectiveness of those BMPs

4. Interim Compliance Assessment – By June 30, 2016, the MS4 co-permittees, in coordination with the TMDL Task Force will provide an evaluation of compliance with the interim TMDL requirements. The CNRP will be revised and additional projects/BMPs will be implemented as appropriate.

   Final Compliance Assessment – By December 31, 2019, the MS4 co-permittees, in coordination with the TMDL Task Force, will provide an evaluation of compliance with the final TMDL requirements. The CNRP will be revised and additional projects/BMPs will be implemented as appropriate.

5. TMDL Revision Recommendations - MS4 co-permittees, in coordination with the TMDL Task Force, will prepare a report proposing recommended revisions to the Nutrient TMDLs. These recommendations will be based on data collected and results of CNRP (and other stakeholder) project implementation. The TMDL Recommendation Report will be submitted by December 31, 2015 and December 31, 2018.

Adaptive Implementation

As noted above, the Final CNRP relies on an Adaptive Management Approach. As new information is collected, the CNRP and/or the TMDLs may be revised. Regional Water Board staff believes that this is an appropriate approach to take when addressing the complexities associated with controlling nutrients from multiple sources in this large watershed.

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Based upon review of the proposed CNRP and supporting analyses and documentation, Board staff believes that the MS4 co-permittees have identified an effective and workable approach to the control of nutrients in Lake Elsinore and Canyon Lake. The CNRP provides reasonable assurance that the urban and septic system allocations will be met in accordance with the schedules identified in the TMDLs and the Riverside County MS4 permit. Provided that the other responsible parties also implement actions to control nutrient loads, the actions identified in the CNRP are expected to lead to compliance with the TMDLs.

Staff Recommendation:

Adopt Resolution No. R8-2013-0044 approving the Riverside County MS4 Agencies Lake Elsinore/Canyon Lake Nutrient TMDLs CNRP.

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Attachments

Attachment 1 – Resolution No. R8-2013-0044

Attachment 2 – Response to Comments

Table E-1. CNRP Implementation Plan**

CNRP Activity	CNRP Element	Milestones	Metrics	Lead	Estimated Complete by
Watershed-based BMPs	Ordinances Development	Evaluate need to revise existing or establish new ordinances to reduce sources of nutrients in the watershed	Complete ordinance evaluation	Permittees	March 31, 2014
			Develop revised or new ordinances (where needed)	Permittees	December 31,2014
	Street Sweeping & Debris Removal	Street Sweeping & Debris Removal	Evaluate existing street sweeping and debris removal programs to identify opportunities to enhance program	Permittees	March 31, 2014
			Implement program enhancements, where identified, and as approved in local jurisdiction	Permittees	December 31, 2014
			Annual reporting of regular street sweeping and debris removal outcomes in Annual Report, with emphasis on TMDL benefits	Permittees/MS4 Program	November 30, each year
	Inspection & Enforcement	Continued implementation of inspection and enforcement program	Update inspection and enforcement program if needed based on outcome of ordinance evaluation	Permittees	March 31, 2015
			Annual reporting of regular inspection and enforcement activities in Annual Report	Permittees/MS4 Program	November 30, each year
	Septic System Management	Continued implementation of Septic System Management Plan for the watershed; modify implementation as needed to comply with State OWTS Policy	Annual reporting of septic system management activities in Annual Report,	Permittees	November 30, each year
	Public Education & Outreach	Continued implementation of PEO program	As part of Annual Report preparation evaluate PEO program to determine need to modify or expand PEO activities that target nutrient sources	Permittees/MS4 Program	November 30, each year
			Update PEO materials, as needed; implement PEO program	Permittees/MS4 Program	Annually, as needed

Table E-1. CNRP Implementation Plan**

CNRP Activity	CNRP Element	Milestones	Metrics	Lead	Estimated Complete by
	WQMP Implementation	Implement approved LID-based WQMP following Regional Board approval	Prepare final WQMP, obtain Regional Board approval, and implement in watershed	Permittees/MS4 Program	Full WQMP Implementation- April 22, 2013
In-Lake Remediation Projects	Lake Elsinore	Support implementation of existing lake aeration system	Establish necessary agreements among aeration system participants	MS4 Program in collaboration with stakeholders	June 30, 2013
	Canyon Lake	Conduct tests to evaluate potential for chronic aluminum toxicity with planned doses of alum	Toxicity test results to support CEQA initial study	MS4 Program in collaboration with stakeholders	March 15, 2013
		Complete CEQA process	CEQA initial study and approval of alum addition plan	MS4 Program in collaboration with stakeholders	July 31, 2013
		Implement process to obtain all permits and approvals	Secure permits and approvals to add alum from barge at surface	MS4 Program in collaboration with stakeholders	September 30, 2013
		Implement planned alum additions	Completion of planned alum additions to surface of Main Body and East Bay using barge	MS4 Program in collaboration with stakeholders	September , 2013, February, 2014, September 2014, February, 2015, September, 2015
		TMDL reopener for DO response target	Revision of response target that takes into account controllability considerations	MS4 Program in collaboration with stakeholders	June 30, 2016
		Support implementation of long-term in-lake nutrient management BMPs	If needed, establish additional watershed or in-lake BMPs to meet final response targets (e.g. regular alum additions, aeration, HOS, etc.)	MS4 Program in collaboration with stakeholders	December 31, 2020
Monitoring Program	In-Lake Monitoring	Implement alum treatment effectiveness monitoring	Develop and begin implementation of a plan for effectiveness monitoring to obtain sufficient data to evaluate performance of alum treatment in Canyon Lake.	MS4 Program in collaboration with stakeholders	June, 2014
		Prepare revised comprehensive monitoring program	Submit revised comprehensive monitoring program to the Regional Board for approval	MS4 Program in collaboration with stakeholders	December 31, 2014

Table E-1. CNRP Implementation Plan**

CNRP Activity	CNRP Element	Milestones	Metrics	Lead	Estimated Complete by
		Implement Regional Board-approved revised comprehensive monitoring program	Completion of annual monitoring as required by revised program	MS4 Program in collaboration with stakeholders	December 31, 2020
	Watershed-based Monitoring	Continue implementation of Phase I watershed monitoring program	Completion of annual monitoring as required by current approved monitoring program	MS4 Program in collaboration with stakeholders	June 30, 2015
		Prepare revised comprehensive monitoring program	Submit revised comprehensive monitoring program to the Regional Board for approval	MS4 Program in collaboration with stakeholders	December 31, 2014
		Implement Regional Board-approved revised comprehensive monitoring program	Completion of annual monitoring as required by revised program	MS4 Program in collaboration with stakeholders	December 31, 2020
	Annual Reports	Complete annual reports to assess effectiveness of CNRP	Submittal of annual reports to Regional Board	MS4 Program in collaboration with stakeholders	November 30, annually
	Interim Compliance Assessment	Demonstrate compliance with interim TMDL requirements	Submittal of assessment of compliance with interim TMDL requirements	MS4 Program in collaboration with stakeholders	June 30, 2016
	Final Compliance Assessment	Demonstrate compliance with WLAs	Submittal of assessment of expected compliance with final TMDL requirements including any recommended supplemental actions.	MS4 Program in collaboration with stakeholders	December 31, 2020
Special Studies (Optional)	Land Use Updates	Update watershed urban land use based on 2010 data	Submit land use revision to the Regional Board	MS4 Program in collaboration with stakeholders	June 30, 2018
	TMDL Model Update	Revise/update TMDL models for Canyon Lake/ Lake Elsinore based on new data (e.g., land use, water quality)	Submit TMDL models to the Regional Board	MS4 Program in collaboration with stakeholders	December 31, 2018

Table E-1. CNRP Implementation Plan**

CNRP Activity	CNRP Element	Milestones	Metrics	Lead	Estimated Complete by
Adaptive Implementation	Task Force	Participate in Task Force process	Regular attendance at Task Force meetings	MS4 Program in collaboration with stakeholders	Ongoing
	CNRP Revisions	Review progress towards achieving TMDL requirements based on compliance assessments; modify CNRP as needed	Prepare compliance assessment; if needed, submit revised CNRP to the Regional Board	MS4 Program/Permittees	November 30, 2016
		Review progress towards achieving final TMDL requirements based on compliance assessments; modify CNRP as needed	Prepare compliance assessment; if needed, submit revised CNRP to the Regional Board	MS4 Program/Permittees	June 30, 2020
	TMDL Revision	Based on degree of Regional Board support, prepare materials to support revision to the TMDL, coordinate with Triennial Review process, if revision is appropriate and feasible.	Submit recommendations and supporting material for revisions to the TMDL to the Regional Board	MS4 Program in collaboration with stakeholders	Prior to potential triennial review dates in 2015 and 2019

**** Source: Riverside County Flood Control and Water Conservation District, January 28, 2013, CNRP: Attachment E.**

ATTACHMENT 1

RESOLUTION No. R8-2013-0044

California Regional Water Quality Control Board
Santa Ana Region

RESOLUTION NO. R8-2013-0044

Resolution Approving the Comprehensive Nutrient Reduction Plan Submitted Pursuant to the National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for the Riverside County Flood Control and Water Conservation District, the County of Riverside, and the Incorporated Cities of Riverside County within the Santa Ana Region, Order No. R8-2010-0033, NPDES No. CAS618033

WHEREAS, the California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. An updated Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) was adopted by the Regional Board on March 11, 1994, approved by the State Water Resources Control Board (SWRCB) on July 21, 1994 and approved by the Office of Administrative Law on January 24, 1995.

2. Amendments to the Basin Plan to incorporate Lake Elsinore and Canyon Lake Nutrient Total Maximum Daily Loads (TMDLs) were approved by the Regional Board on December 20, 2004, by the State Water Resources Control Board on May 19, 2005, by the Office of Administrative Law on July 26, 2005 and by the US Environmental Protection Agency on September 30, 2005.

3. The Lake Elsinore and Canyon Lake Nutrient TMDLs were developed in accordance with Clean Water Act Section 303(d) and Water Code Section 13240 *et seq*. The TMDLs are incorporated in Chapter 5 "Implementation", of the Basin Plan.

4. The Lake Elsinore and Canyon Lake Nutrient TMDLs (Nutrient TMDLs) specifies final numeric targets to be met by 2020 for total phosphorus and total nitrogen for both Lake Elsinore and Canyon Lake. Control of nitrogen and phosphorus is needed to ensure compliance with relevant numeric and narrative water quality objectives specified in the Basin Plan, including those pertaining to excessive algae growth and dissolved oxygen.

5. The Nutrient TMDLs specify interim and final response numeric targets for chlorophyll *a* and dissolved oxygen for both Lake Elsinore and Canyon Lake. These response numeric targets provide a method to track improvements in water quality resulting from reduction in the loading of nitrogen and phosphorus. Interim targets are to be met by 2015; final targets are to be met by 2020.

6. The Nutrient TMDLs specify final TMDLs, wasteload allocations for point source discharges (WLA), load allocations for nonpoint source discharges (LA) for total phosphorus and total nitrogen for Lake Elsinore and Canyon Lake.

7. The Lake Elsinore/Canyon Lake Nutrient TMDLs require Riverside County municipal separate sewer system (MS4) dischargers to comply with the nitrogen and phosphorus

wasteload allocations (WLAs) by December 31, 2020. The WLAs are expressed as a 10-year running average.

8. Specific co-permittees within the Santa Ana Region and Riverside County are required to comply with the Lake Elsinore/Canyon Lake TMDLs, including Riverside County Flood Control and Water Conservation District (RCFCD), the County of Riverside, and the cities of Riverside, Lake Elsinore, Canyon Lake, Hemet, San Jacinto, Perris, Moreno Valley, Murrieta, Menifee, Wildomar and Beaumont.

9. On January 29, 2010, the Regional Board adopted a revised National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for the municipal separate storm sewer system of specified Riverside County municipalities within the Santa Ana Region (Order No. R8-2010-0033, NPDES No. CAS618033) (MS4 permit).

10. Lake Elsinore/Canyon Lake Nutrient TMDL requirements were incorporated into the revised MS4 permit.

11. Section VI.D.2.d. of the MS4 permit requires the co-permittees to prepare a Comprehensive Nutrient Reduction Plan (CNRP) designed to achieve compliance with the urban wasteload allocation and the septic system load allocation specified in the TMDLs. Upon Regional Board approval of the CNRP, the CNRP serves as the final Water Quality Based Effluent Limit (WQBEL) for nutrients in the MS4 permit.

12. On December 30, 2011, RCFCD and the Co-Permittees submitted a draft CNRP, in accordance with the Riverside County MS4 permit. Regional Board staff reviewed the draft CNRP and on March 30, 2012, provided comments to RCFCD and the Co-Permittees.

13. On June 28, 2012, RCFCD and the Co-Permittees submitted a revised CNRP. Based upon further analysis conducted by the RCFCD and the Co-Permittees, a revised Final CNRP dated January 28, 2013 was submitted. The Regional Board has reviewed the revised CNRP and finds that it complies with the requirements outlined in the MS4 permit. Provided that it is implemented appropriately and in a timely manner, the CNRP provides reasonable assurance that the Lake Elsinore and Canyon Lake nutrient urban/septic system allocations will be achieved in accordance with the schedules identified in the MS4 permit and the Nutrient TMDLs.

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The Regional Board approves the CNRP and associated schedule for implementation as submitted by RCFCD and the Co-Permittees on January 28, 2013.

2. For the purposes of the MS4 permit, the Riverside County CNRP will serve as the final Water Quality Based Effluent Limitations for nutrients discharged to Lake Elsinore and Canyon Lake.

3. The CNRP shall be implemented immediately upon approval.

4. RCFCD, the County of Riverside, and the Cities of Riverside, Lake Elsinore, Canyon Lake, Hemet, San Jacinto, Perris Moreno Valley, Murrieta, Menifee, Wildomar and Beaumont are in compliance with Section VI.D.2.d. of the Riverside County MS4 permit, provided that the CNRP is implemented in a timely manner.

5. Based upon completion of the tasks and activities described in the CNRP, and analysis of BMP effectiveness, the CNRP shall be updated as specified in the CNRP.

6. The Regional Board's Executive Officer is hereby delegated authority to approve subsequent revisions to the CNRP plans and schedule. The updated CNRP shall be implemented upon approval by the Executive Officer.

I, Kurt V. Berchtold, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Santa Ana Region, on July 19, 2013.

_____

Kurt V. Berchtold
Executive Officer

ATTACHMENT 2

Index of Comments/Responses

Colin Kelly
Staff Attorney
Inland Empire Waterkeeper (IEWK)
(Letter dated September 20, 2012)

Note: IEWK provided comments on the December 31, 2011 draft CNRP; no comments were provided on the January 28, 2013 Final CNRP.

Comment 1
Mr. Kelly notes that the December 31, 2011 CNRP does not include all of the relevant municipalities with responsibility to meet TMDL requirements.

Staff Response
All relevant municipalities were included in the January 28, 2013 CNRP.

Comment 2
Mr. Kelly indicates that the Regional Board should clarify its jurisdiction to order compliance with the CNRP if the cities of Murrieta and Wildomar, which are MS4 Co-Permittees covered by the San Diego Regional Water Board MS4 Permit, fail to satisfy their obligations.

Staff Response
The Santa Ana and the San Diego Regional Water Boards have a Designation Agreement for addressing Murrieta and Wildomar stormwater discharges which are which are within both Regional Water Board boundaries. As discussed in the agreement, in the event that Murrieta or Wildomar fails to implement the CNRP provisions or TMDL requirements, the Santa Ana Board has the ability to take independent enforcement action or the Santa Ana Board could coordinate with San Diego Regional Water Board staff to take enforcement action.

It must be emphasized that oversight of the TMDL provisions will be conducted by the Santa Ana Board staff. As detailed in the CNRP, detailed annual reports submitted to the Santa Ana Board will include a summary of all municipal actions to implement the CNRP and comply with the TMDL. Santa Ana Board staff intend to monitor compliance by all cities through review of the annual reports.

Comment 3
Mr. Kelly expressed concern about the proposed CNRP approach to apply Phoslock to Canyon Lake sediment. Mr. Kelly believes that further analyses of aquatic impacts and mitigation needed to offset those impacts should be included.

Staff Response
As discussed in the January 28, 2013 CNRP submittal, the co-permittees are no longer proposing the addition of Phoslock to Canyon Lake; instead the CNRP proposal is to apply aluminum sulfate (Alum) to Canyon Lake. Based on modeling and analysis conducted by the stakeholder's consultant, Alum addition appears to offer an effective solution for binding sediment phosphorus which will reduce algae concentrations. The potential effects of Alum on aquatic life were addressed in the January 28, 2013 CNRP. Section 3.4.2.3 discusses the results from simulation studies conducted by the stakeholders and the planned toxicity

tests. Since the CNRP submittal, these toxicity tests have been conducted and the results showed no evidence of toxicity even at concentrations of Alum addition above those planned for Canyon Lake. The stakeholder's consultant, Mr. Tim Moore, prepared a White Paper summarizing the results of these studies. The White Paper can be found on the Santa Ana Watershed Project Authority's (SAWPA) web-site at the following link:

http://www.sawpa.org/wp-content/uploads/2012/05/Proposed-Alum-Applications-Will-Not-Cause-Toxicity-to-Fish-or-Other-Aquatic-Organisms-in-CL-or-LE.pdf

Comment 4
Mr. Kelly would like to ensure that TMDL implementation and CNRP implementation are coordinated with the [pending] San Diego Regional Water Board unified MS4 permit.

Staff Response
Regional Board staff does not understand this comment. The San Diego Regional Board's unified MS4 permit does not implement the Santa Ana Region's TMDLs. As noted in Response to Comment #2, oversight of the Lake Elsinore TMDL is wholly the responsibility of the Santa Ana Regional Water Board.

Pat Kilroy
Director, Lake, Parks and Recreation Department
City of Lake Elsinore
(Letter dated April 30, 2013)

Comment 5
Mr. Kilroy indicated that in November 2007, the Regional Water Board approved the Lake Elsinore In-lake Sediment Nutrient Reduction Plan that included a three-prong approach for meeting TMDL requirements; fishery management, aeration/mixing and the addition of recycled water. The Regional Water Board should require the MS4 agencies to not backslide and implement all of those provisions. Most notably, the MS4 agencies' CNRP should the commitment to include recycled water addition as part of their strategy.

Mr. Kilroy provided data and results of studies that demonstrate the benefits of recycled water addition to Lake Elsinore.

Staff Response
As reflected in the Regional Board's approval of the Lake Elsinore In-Lake Sediment Nutrient Reduction Plan, we agree that the three-pronged approach, including the addition of recycled water, incorporated in the Plan is a sound approach to meeting TMDL requirements. The TMDLs recognize the benefits of recycled water addition for lake stabilization purposes and include nitrogen and phosphorus wasteload allocations for that source. However, neither the TMDLs nor the Plan itself assign this responsibility for recycled water addition to the MS4 co-permittees. The Plan indicates that EVMWD will be providing for the recycled water addition. The MS4 co-permittees have an option, but not a

requirement, to join in the funding support for the addition of recycled water. The proposed CNRP identified another path to MS4 WLA compliance that Regional Board staff believes is acceptable. The City of Lake Elsinore itself, as an MS4 co-permittee, was required to participate in the development of the CNRP. Indeed, the January 28, 2013 CNRP submittal included a Certification Statement signed by the City of Lake Elsinore City Manager, presumably reflecting the City's concurrence with the proposed CNRP. In this context, Mr. Kilroy's comment is surprising: had the City not been satisfied with the proposed CNRP, an objection to it, rather than certification of it would be the reasonable expectation.

Jason Uhley
Chief of Watershed Protection Division
Riverside County Flood Control and Water Conservation District
(Letter dated April 30, 2013)

Comment 6

Mr. Uhley provides responses to the City of Lake Elsinore's April 30, 2013 comment letter. Specifically, the Riverside County Flood Control and Water Conservation District (District) refutes the City's contention it is the responsibility of the MS4 agencies to fund the recycled water addition. Mr. Uhley indicates the recycled water addition is being conducted pursuant to an agreement between the EVMWD and the City that settled water rights litigation brought by the City in 2001. That litigation was initiated to enforce prior agreements between the parties dating back to a 1991 agreement to Fill and Operate Lake Elsinore. Mr. Uhley references water rights agreements dating back to 1927.

Mr. Uhley further comments that the TMDL allowance for the addition of recycled water with a major nitrogen and phosphorus allocation resulted in reducing nutrient wasteload and load allocations for the remaining TMDLs responsible parties, including the Permittees. Thus, in effect, the MS4 agencies as well as other TMDL stakeholders will, in fact, be indirectly paying for the recycled water addition through their funding of other lake management strategies to offset the nutrient loading contributed by the recycled water.

Finally, Mr. Uhley points out that the use of recycled water to stabilize lake levels is not required by the TMDL or by the water rights agreement; other sources of lake stabilization water could be found, such as from Canyon Lake, the Island wells or raw water. Such sources would contribute far less to the nutrient loads going into Lake Elsinore than recycled water and provide more assimilative capacity to the Lake.

Staff Response

Regional Water Board staff agree with Mr. Uhley's comments. As noted in Response to Comment #5, Regional Water Board staff does not support the City of Lake Elsinore's proposal to require that the CNRP also include a provision for the MS4 agencies to provide recycled water to Lake Elsinore.

Tim Hults
City Manager
City of San Jacinto
(Letter dated April 29, 2013)

Comment 7
Mr. Hults indicates that the City of San Jacinto is supportive of the January 28, 2013 CNRP and recommends that the Regional Water Board adopt the CNRP as submitted. Mr. Hults notes that it was a two year process involving all the municipalities as well as the County of Riverside, the Flood Control and Water Conservation District and other TMDL responsible stakeholders to evaluate various strategies, conduct detailed and extensive modeling in order to develop the proposed CNRP approach to address nutrients both in-lake and in the watershed.

Staff Response
Regional Water Board staff acknowledge the extensive amount of effort by the MS4 agencies and other TMDL partners (e.g., agriculture and EVMWD) to develop appropriate strategies for complying with the Lake Elsinore/Canyon Lake Nutrient TMDLs. Board staff believe that the phased iterative approach coupled with on-going monitoring to track progress will improve water quality in the two lakes.

Steve Horn
NPDES Stormwater Program Administrator
Executive Office
County of Riverside
(Letter dated April 29, 2013)

Comment 8

Mr. Horn reaffirms that the January 28, 2013 CNRP provides a comprehensive, thoroughly studied and technically feasible method to achieve the Lake Elsinore/Canyon Lake Nutrient TMDLs urban waste load allocations. Mr. Horn indicates that the CNRP provides a reasonable and stepwise approach to addressing the impairments in both lakes by supporting deployment of those BMPs expected to best address the nutrient impairment. Moreover, Mr. Horn notes that the CNRP identifies additional and/or alternative BMPs to supplement initial BMPs if those initially implemented do not meet the WLA objectives.

Staff Response
Regional Water Board staff agree.

Comment 9
Mr. Horn further provides responses to the City of Lake Elsinore comments. The responses by Mr. Horn are similar to those provided by the Riverside County Flood Control and Water Conservation District.

Staff Response
See Response to Comments #5 and #6